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AUTHOR Thompson, Ray H.
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ABSTRACT

The study examined teacher-student interaction patterns in 21 classrooms serving mainstreamed third and fourth grade mildly handicapped (mildly mentally retarded, mildly emotionally handicapped, and learning disabled) students. Three groups of target students were observed: nonhandicapped high achievers, nonhandicapped low achievers, and mildly handicapped mainstreamed students. Observational data were correlated with 16 characteristics of mainstreamed classrooms (including social environment, parent-teacher interaction, classroom management, instructional methods, curriculum flexibilty, and affective education). Multivariate Analysis of Variance was used to determine if an overall difference existed in teacher-student interaction among groups and canonical correlation to determine which elements of the classroom learning environments were related to patterns of teacher-student interaction. Results of the study and comparison with previous ones in Utah and South Dakota/Iowa are detailed. It is concluded that although there is substantial evidence that teacher-student interaction varies among the student groups observed, there is no strong evidence that general preferential treatment or treatment likely to result in better educational gains or a more effective learning environment is consistently provided to any single group of students. Among findings are that teacher feedback was generally neutral to all students when the feedback was about academic or procedural matters and that teachers were engaged in academic interactions with all student groups an average of only 60% of the time. (Author/CL)

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FINAL REPORT
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Teacher-Student Interaction Patterns Within the Learning Environment of Mainstreamed Classrooms

Ray H. Thompson
Associate Professor
The University of South Dakota

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ABSTRACT

This study was designed to conduct basic research. The purpose was to add to a growing body of knowledge about the teacher-student interaction patterns in mainstreamed classrooms. In addition this study began looking at the relationship between teacher -student interaction patterns as they exist in the mainstreamed classroom's learning environment. Twenty-one classrooms which had mainstreamed handicapped students were observed for five days. Three groups of target students were observed using the Brophy-Good system: (1) non-handicapped high achievers, (2) non-handicapped low achievers, and (3) mildly handicapped mainstreamed students. The observational data gathered was correlated with characteristics of mainstreamed classrooms (e.g., Social Environment, Parent-Teacher Interaction, Classroom Management, Social Environment, etc.).

In order to overcome some of the problems with previous research Multivariate Analysis of Variance (MANOVA) was used to determine if an overall difference existed in teacher-student interaction among the groups observed. Canonical correlation was used to determine which elements of the classroom learning environments were related to the patterns of teacher-student interaction described. Descriptive statistics were also used as part of the data analysis procedures in order to provide a more complete picture of mainstreamed classrooms.

Because a significant MANOVA was found, the sixteen teacher-student interaction variables were further analyzed using Univariate Analysis of Variance (ANOVA). Seven significant differences were found. Following each significant ANOVA the Newman Keal's multiple comparison test was used to describe differences among the three student groups. Canonical correlation was used in an attempt to correlate teacher-student interaction and classroom learning environment variables. Because of the interdependence of the classroom variables used, this approach was not successful. However, descriptive statistics do provide some information describing mainstreamed classroom learning environments.

INTRODUCTION

As a result of the public schools' effort to implement the principle of "least restrictive environment" (LRE), the student composition, the social climate, and the teacher's responsibilities within the regular elementary classroom are changing. When a child needs specialized instruction, the LRE principal requires that the child be educated in settings as close to natural as is optimal for the child. Often, for many mildly handicapped children, the appropriate setting is the regular classroom. Chiba and Semmel (1977) stated, "It is obvious that the least restrictive alternative provisions of PL 94-142 are being translated within the broad framework of 'mainstreaming'" (p. 27). The passage of this law, thus, gives support on a national level to the integration of handicapped students into regular classrooms.

Ultimately, the success of educating handicapped children in the regular classroom will be largely dependent upon the regular classroom teacher and the support she receives. Some insight into the likelihood that the regular classroom teacher will be successful may be gained by examining the teacher's interaction patterns with both handicapped and non-handicapped students, and their perception of the "ideal" mainstreamed environment. The use of systematic "naturalistic" observation in regular classrooms where mildly handicapped students are being mainstreamed has the promise of sharpening our understanding and gaining the insight needed to make mainstreaming work.

REVIEW OF LITERATURE

REGULAR CLASSROOMS

There are a large number of studies that utilized 'naturalistic observation' in regular classrooms where the observation targets were nonhandicapped students. The findings of studies that examined teacher-nonhandicapped student interaction may be summarized as follows:

1. Teachers tend to respond more favorably, provide more praise, and are more supportive of high achieving students than low achieving students (Horn, 1914; deGroat & Thompson, 1949; Beehn, 1954; Brophy & Good, 1970).

2. Teachers initiated more contacts and were involved in more interactions with high achievers than they were with low achievers (Good, 1970; Kranz, Weber, & Fishell, 1970); Carne & Bing, 1973).

3. After asking a question, teachers waited longer for "high" performing students to give an answer (Rowe, 1969).

4. Teachers, in general, are not aware of the specific ways in which they attempt to influence classroom behavior and are especially unaware of the qualitative aspects of their interactions with students (Brophy & Good, 1974).

5. Teachers provided less feedback on performance to "low" performers (Brophy & Good, 1974).

6. Teachers can be made aware of inappropriate behavior through systematic observations and feedback procedures that can readily alter teaching styles under appropriate conditions (Rowe, 1972; Good & Brophy, 1978).

The indication from research findings that teachers react less favorably to low achieving students has important implications in the field of special education. The trend toward mainstreaming will result in increasing number of regular classroom teachers being responsible for the instruction of mildly handicapped students placed in their classrooms. In discussing potential interactions between mainstreamed mildly handicapped students--that is, students classified as educable mentally retarded, mildly emotionally handicapped, and learning disabled--and regular classroom teachers, Larsen (1975) warned that, "In all probability, special education students will receive more criticism from their teachers than their achieving peers, will be exposed to far fewer teacher contacts, and will develop less positive concepts of self-worth" (p. 12).

MAINSTREAMED CLASSROOMS

At this point in time it is not clear if Larsen's prediction's were accurate. To date, only a few studies have been conducted where teacher-student interaction was examined in the mainstreamed learning environment. Many of the results presented on are contradictory. For example, Bryan and Wheeler (1972) and Bryan (1974) found that the teacher initiated about the same number of interactions with the handicapped as compared to nonhandicapped students. However, Wherry and Quay (1969), Forness and Esveldt (1975), and Chapman (1975) found that the number of interactions with handicapped students were more frequent than with nonhandicapped students. The results of studies by Fink (1977), Bryan and Wheeler (1972), and Bryan (1974) all showed that teacher-handicapped student interactions tended to be negative in nature. Chapman (1975), on the other hand, found that handicapped students received more preferential treatment in some situations.

The limited research on teacher-handicapped student interaction patterns not only presents contradictory evidence but results are further clouded by fundamental weaknesses in the research designs or statistical procedures employed. Characteristics of the student sample have been limiting factors in several of the studies (Bryan and Wheeler, 1972; Bryan, 1974); Fink, 1977; Carey, 1977). Limited observational data have further weakened these studies. Another methodological shortcoming has been that the studies have examined multiple dependent variables, using univariate Analysis of Variance (ANOVA) procedures without first using Multivariate Analysis of Variance (MANOVA). Chapman (1975), for example, computed 86 separate univariate ANOVA's. This approach substantially inflates the Type I error rate, meaning that many "statistically significant" differences will be identified by chance.

PILOT STUDY

In an effort to add clarification and overcome some of the methodological problems, a study conducted by Thompson, White, and Morgan (1982) to systematically observe elementary teachers as they interacted with mainstreamed handicapped students, nonhandicapped high achievers, and nonhandicapped low achievers used a large sample, multiple measures, and multivariate techniques to analyze the data. Specifically, the study used a modified version of the Teacher-Child Dyadic Interaction System (Brophy and Good, 1969) to observe teacher-student interaction patterns in 12 third grade mainstreamed classrooms in two northern Utah cities. A total of 129 students in the following four groups were observed: (1) nonhandicapped high achievers, (2) nonhandicapped low achievers, (3) learning disabled, and (4) behaviorally handicapped. A Multivariate Analysis of Variance (MANOVA) procedure was used to overcome the problem of multiple dependent measures. The large number of students observed (in comparison to similar research) and the fact that the study was run for eight days (one day a week for eight weeks) also helped to overcome some of the earlier studies' methodological problems.

The overall conclusion of the study was that there were significant differences in teacher-student interaction patterns among the four student groups. Some of the data suggested that teachers provided preferential treatment to mildly handicapped students in some situations (e.g., higher amounts of sustaining feedback to behaviorally handicapped students); however, there was also some data that indicated that teachers provided preferential treatment to high achievers in some situations (e.g., higher amounts of praise to highs). There was further evidence that behaviorally handicapped students took a large amount of the teacher's time and a disproportionate percentage of that time was spent in behavioral interactions.

Teachers tended to treat all students about the same when interactions involved academic and procedural matters. They generally did not provide positive reinforcement nor did they criticize. They were overwhelmingly neutral in providing feedback to the students. When teachers interacted about behavioral matters, they used a majority of warnings for all student groups. Only a small percentage of their feedback was praise or criticism. The majority of both teacher and student initiations were academic as opposed to procedural (i.e., initiations involving nonacademic activities).

The results of the Utah study did not support the view that handicapped children who are being mainstreamed into regular education classrooms will be at a severe disadvantage because of preferential teacher interactions provided to nonhandicapped students. However, the results did indicate that more effective learning environments need to be designed for all students. Regular classroom teachers need to increase the proportion of positive feedback and decrease neutral and disapproving feedback and also achieve a better balance between academic and procedural activities.

SOUTH DAKOTA/IOWA STUDY

In an attempt to replicate the pilot study conducted in Utah a second study was designed and proposed to the Office of Special Education and Rehabilitative Services. Funding was received and the study was conducted in South Dakota and Iowa. The purpose of the South Dakota/Iowa (SD/I) study was to provide additional descriptive data about teacher-student interaction patterns in mainstreamed classrooms and add generality to the findings of the pilot study.

The number of classrooms observed in the SD/I study was expanded to twenty-one as compared to twelve in the Utah study. The number of observation days was reduced from eight to four. In the Utah study, 480 hours of data were collected while in the SD/I study, 420 hours of data were collected. The handicapped target students observed in the SD/I study were left as one group called mildly handicapped and not separated out by handicapping conditions as in the Utah study. In both studies, teacher-student interaction was defined as a composite of 16 dependent measures derived from the 54 Brophy-Good categories. The six research questions used in the Utah study were again addressed in the SD/I study to determine if teacher-student interaction patterns were different for student groups. Table I presents the six research questions and the corresponding dependent measures.

A paradigm for studying teaching in natural setting or classroom, labeled the Descriptive-Correlational-Experimental Loop, has been proposed by Rosenshine and Furst (1973). The

Table I

Research Questions and Dependent Measures

Research Questions	Dependent Measures
1. Is there a difference in teacher-initiated interactions tc students?	1. Frequency of Teacher Initiations 2. Proportion of teacher initiations initiations which are academic 3. Proportion of teacher initiations which are procedural 4. Proportion of teacher initiations which are behavioral
2. Is there a difference in student-initiated interactions tc teachers?	5. Frequency of teacher initiations 6. Proportion of student initiations which are procedural as opposed to academic
3. Is there a difference in the type cf teacher feedback given to students?	7. Frequency of teacher feedback 8. Proportion of teacher feedback which is academic 9. Proportion of teacher feedback which is procedural 10. Proportion of teacher feedback which is behavioral 11. Proportion of teacher feedback which is sustaining as opposed to terminal
4. Is there a difference in the quality cf teacher feedback given to students?	12. Quality of academic teacher feedback (i.e., praise, neutral, criticism) 13. Quality of procedural teacher feedback (i.e., praise, neutral, criticism) 14. Quality of behavioral teacher feedback (i.e., praise, warnings, criticism)
5. Is there a difference in the type cf response opportunities provided tc students by the teacher?	15. Proportion of response opportunities which are volunteer as opposed to nonvolunteer
6. Is there a difference in the type cf question asked of the students by by the teacher?	16. Quality of questions asked by the teacher (i.e., process, product, choice, self-reference)

first step of that paradigm is the development of procedures for describing teaching in a qualitative manner. This step was begun in the pilot study conducted in Utah and repeated in the South Dakota/Iowa study. An attempt to accomplish the second step in the paradigm was made in the SD/I study. A second main research question which examined the regular classroom teachers perceptions of the classroom learning environment was addressed. The research question was stated as follows:

> Is there a relationship between how regular classroom teachers perceive their classroom learning environment in comparison to descriptions of an "ideal" mainstreamed classroom learning environment and teacher-student interaction patterns?

For the purpose of the SD/I study, classroom learning environment as measured by the Assessment of Classroom Learning Environment Scale (ACLE) was defined as a composite of the following 16 dependent measures:

1. Space and facility accommodations to physical impairments
2. Teaching-learning settings
3. Social environment
4. Control of and responsibility for environment
5. Classroom management
6. Teaching arrangements
7. Instructional methods
8. Curriculum flexibility
9. Materials
10. Degree of structure
11. Rate of learning
12. Evaluation
13. Affective education
14. Recognizing and appreciating cultural differences
15. Child study process
16. Parent-teacher interaction

METHOD

SAMPLE

Thirty third- and fourth-grade teachers in South Dakota and Iowa were asked to participate in the study. Twelve third- and nine fourth- grade teachers volunteered and were observed for the full length of the study. All were females and their average teaching experience was 16 years. Each teacher taught in a traditional self-contained classroom and had two, three, or four mildly handicapped students mainstreamed in her classroom. Mildly handicapped children are identified as "students in need of special assistance" in South Dakota and as educable mentally retarded, mildly emotionally handicapped, and learning disabled in Iowa. Each student had an IEP written and was receiving at least one half-hour of resource room help a day but no more than two and one half hours per day.

All but two teachers had previously taught handicapped children in regular classrooms. Teachers were not informed about the specific purpose of the study nor of the nature of the data to be collected until after the study was completed. Teachers were asked to rank their classes on a five-point scale in terms of general academic achievement. The five levels were as follows: (1) lowest, (2) next-to-lowest, (3) average, (4) next-to-highest, and (5) highest. Teachers were told that they could use the most recent standardized achievement test scores as reference.

High-achieving and low-achieving target students were selected in numbers equal to the identified handicapped students in each class. For example, if a class had three identified handicapped students, then three students were identified as low achievers (i.e., students ranked 1) and three students were identified as high achievers (i.e., students ranked 5). Thus, a total of nine students were observed. A total of 58 high achievers, 58 low achievers, and 61 handicapped students (in one class there were 6 handicapped students but only 3 highs and 3 lows) were identified and observed. Of the twenty-one classrooms, five classes had four students in each of the three target groups, six classes had three in each target group, and ten classes had two students in each of the three target groups.

PROCEDURE

Each classroom was observed one day a week for a total of 5 weeks in the late winter and early spring. The first day was used for classroom training and adaptation time for both observers and subjects and for interobserver agreement checks. A total of 420 hours of observational data were collected and used in the final data analysis.

Eight graduate students from the University of South Dakota were trained according to procedures outlined by Coulter (1976). Each observer was provided with 40 to 50 hours of intensive training until a minimum of 80 percent of interobserver agreement was achieved. Training proceeded in three stages: written transcripts; videotapes; and, finally, real classrooms.

Interobserver agreement was calculated during each phase of the training using the procedure suggested by Coulter (1976, p. 19). Random pairs of observers coded together during the transcript (79% average agreement) and the videotapes (average agreement 81%) phases. During the training phase involving real classrooms, observers used one or more days to learn the target students and allow for adaptation of the teacher and students to the observer's presence. A final interobserver agreement check was made during this phase by having observers code for half an hour with each other in the training classroom. All pairs were at or above the required 80% level.

OBSERVATION INSTRUMENT

Overview. Data were collected using a modified version of the Teacher-Child Dyadic Interaction System (Brophy and Good, 1969). This system focuses on interactions between the teacher and each student (i.e., teacher-student interactions are recorded and analyzed separately for each student), thus making the student rather than the class the unit for which data are collected (Brophy & Good, 1969). The system also preserves the sequential nature of teacher-student interactions in the coding process. Modification of the Brophy-Good system included dropping the reading-recitation coding sheet and adding a section for child-initiated response opportunities (i.e., student-initiated questions and comments in public situations). In addition, a section for coding teacher- or student-initiated personal comments (i.e., nonschool-related statements) was added. Because handicapped students periodically left the classroom for resource room help, it was also necessary to add a section where each individual student's observation period could be recorded.

Coding Sequence. The type of interaction was the first information coded during observation. Response opportunities were coded when the teacher was interacting with an individual

student in a public situation, and dyadic contacts were coded for private situations. Second, the initiator of the interactions was coded. A distinction was made between teacher-initiated interactions and child-initiated interactions. Within teacher-initiated response opportunities, the type of opportunity provided, the appropriateness of the child's response, and the teacher's feedback were recorded. The type of child-initiated response opportunity and the teacher feedback were recorded when the student made public comments or asked public questions. The major categories with teacher-initiated dyadic contact included work, procedural, observation, and behavioral interactions. Teacher feedback was also coded as praise, process, product, criticism, and/or warning. Within the child-initiated dyadic contacts, work and procedural interactions were coded as praise, process, product, or criticism. Interactions that were unrelated in any way to school interactions were recorded as either teacher-initiated or child-initiated personal contacts. See appendix A for coding sheet and categorical breakdown.

CLASSROOM LEARNING ENVIRONMENT INSTRUMENT

The assessment of Classroom Learning Enivorment Scale (ACLE) was designed by Reynolds (1977) to provide an idealized description of mainstreamed classrooms. The ACLE has sixteen subscales, each of which contains five descriptors which may be used by teachers as self-ratings. Taken at the highest level (i.e., level five descriptors), the scales propose a mainstreaming standard which would be very hard to meet. The scales propose one way of envisioning what an ideal mainstreaming classroom would look like. The ACLE should be viewed as a high inference instrument as opposed to the Brophy-Good system which may be considered a low inference instrument. Each teacher who was observed with the Brophy-Good system was then asked to rate their own classroom in comparison to what an ideal mainstreamed classroom would look like. See appendix B.

DATA ANALYSIS

Raw data collected during the classroom observations were converted into individual student scores for each of the 16 dependent measures of teacher-student interaction. These 16 dependent measures were derived by combining similar types of data from the 72 discrete variables about which the observation system yielded data. Frequency data were standardized by time. (Note: contact the author for the formulas used to construct these 16 dependent measures)

A two-way mixed effects model Multivariate Analysis of Variance (CLASSES with 21 levels were treated as a random effect

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and GROUPS with three levels were treated as a fixed effect) was computed using the computer program MANOVA (Clyde, 1969) with CLASSES as a blocking variable to increase the precision of the analysis. Wilk's lambda criterion was used to test for equality of group centroids. The value calculated with the Wilk's lambda procedure was transformed into an F value through Rao's approximation (Cooley and Lohnes, 1962).

Because the test of lambda produced an F that was statistically significant ($p < .01$; $df=2, 154$), univariate ANOVA's were computed and the resulting F ratios for each dependent measure were examined to determine which measures contributed to the statistically significant MANOVA results. Newman-Keul's Multiple Range Comparison Tests (Winer, 1971) were computed for each dependent variable that yielded a statistically significant univariate F ($p < .05$) for the between GROUPS comparison.

Following the collection of observation data each teacher who was observed was asked to rate herself and her classroom in relationship to an "ideal" mainstreaming situation. This teacher self-rating produced a second set of dependent measures for each of the 21 classrooms. Canonical correlation was used in an attempt to establish the maximum amount of relationship between observed teacher-student interaction patterns and the teacher's description of their mainstreamed classroom learning environment. This type of analysis was used because it takes as it's basic input two sets of variables, each of which can be given theoretical meaning as a group. Problems in the analysis of the data arose because of highly interdependent variables in the dependent measures derived from the Brophy-Good system. Variable number four, Proportion of Teacher Initiations which are Behavioral and Variable number ten, Proportion of Teacher Feedback which is Behavioral had to be left out of the analysis because of their high interdependence.

Lack of interpretability of the canonical variates prevented further analysis as originally proposed. It was felt that a descriptive analysis of the ACLE data would provide some data useful in describing the teacher's view of the mainstreamed learning environments in which they taught.

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RESULTS

TEACHER-STUDENT INTERACTION

Since the first set of research questions asked in the SD/I study are the same as those asked in the Utah study the results of both studies will be presented together in Table II. Because a significant MANOVA was found in both studies it was appropriate to further analyze the data through univariate analysis of variance. As depicted in Table II, the results of the univariate ANOVA's provided information about the dependent variables that were most important and contributed most substantially to the differences identified in the MANOVA. Also shown in Table II are the means and results of the Newman-Keul's multiple comparison tests computed for each dependent measure of teacher-student interaction that was statistically significant at the p .05 level.

Table II reports only the ANOVA results for the main effect of GROUPS since these results were of primary importance in the study. CLASSES were used as a blocking variable. The effect of blocking is to increase the precision of the analysis. The fact that there were statistically significant differences among classes for all of the 16 dependent variables indicates that this strategy was effective. Differences among classes in terms of how a teacher interacts with the students are expected and intuitively logical given the differences in teachers' styles, experiences, and personalities; but they were not the focus of the research reported here.

CLASSROOM LEARNING ENVIRONMENT

The means and standard deviations for each of the ACLE Scales is presented in Table III. Figures one through sixteen provide the distributions of each scale where the stem represents the rated level of mainstreaming and the leaf represents number of teachers rating themselves at that level. Level five presents the "ideal" mainstreamed learning environment. See appendix B for a complete description of the five levels of each ACLE scale.

Table II

Means, Standard Deviations, ANOVA Results, and Neuman-Keuls Multiple Comparison Results for the 16 Dependent Variables Associated with the 6 Research Questions Utah-South Dakota/Iowa Studies

Research Question	Dependent Variable	Utah: Means[a] and Results of Relevant Neuman-Keuls Multiple Comparison Test[b] For Each Group on All 16 Dependent Measures	F Test	South Dakota/Iowa: Means[a] and Results of Relevant Neuman-Keuls Multiple Comparison Test[b] For Each Group on All 16 Dependent Measures	F Test
I. Teacher Initiated Interactions[a]	1. Frequency of Teacher Interactions	2.81 MH / 1.80 LD / 1.66 Lo / 1.38 HI	16.029 p <.01	2.48 Md / 2.21 Lo / 1.90 HI	8.97 p <.01
	2. Proportion of Teacher Initiations which are academic	61.8% HI / 58.3% LD / 57.3% Lo / 51.6% BH	2.190 p >.10	69.4% HI / 64.3% Md / 63.4% Lo	3.42 p <.05
	3. Proportion of Teacher Initiations which are procedural	15.0% HI / 13.8% Lo / 11.5% LD / 11.3% BH	2.618 p >.10	20.4% Md / 19.4% HI / 19.2% Lo	.36 p >.10
	4. Proportion of Teacher Initiations which are behavioral	37.1% BH / 28.8% Lo / 28.2% LD / 23.2% HI	4.019 p <.01	17.4% Lo / 15.3% Md / 11.2% HI	5.04 p <.01
II. Student Initiated Interactions[a]	5. Frequency of Student Initiations	2.09 BH / 1.53 LD / 1.23 Lo / 1.10 HI	3.826 p <.05	1.81 HI / 1.80 Lo / 1.61 Md	1.19 p >.10
	6. Frequency of student initiations which are procedural (as opposed) to academic	25.8% BH / 23.8% LD / 20.4% Lo / 19.6% HI	1.614 p >.10	22.4% / 21.5% / 20.9%	.08 p >.10
III. Type of Feedback[a]	7. Frequency of Teacher Feedback	4.36 BH / 2.80 LD / 2.34 Lo / 1.91 HI	13.738 p <.01	3.63 Lo / 3.37 Md / 2.60 HI	4.04 p <.05
	8. Proportion of Teacher Feedback which is academic	69.8% HI / 66.5% LD / 66.3% Lo / 61.3% BH	2.336 p >.10	72.1% HI / 69.5% Lo / 69.1% Md	1.08 p >.10
	9. Proportion of Teacher Feedback which is procedural	17.1% LD / 16.8% HI / 16.7% BH / 16.2% Lo	.743 p >.10	20.6% HI / 19.7% Md / 18.7% Lo	.78 p >.10
	10. Proportion of Teacher Feedback which is behavioral	22.1% BH / 17.4% Lo / 16.4% LD / 13.4% HI	3.656 p <.05	11.8% Lo / 11.2% Md / 7.3% HI	5.25 p <.01
	11. Proportion of Teacher Feedback which is sustaining (as opposed to terminal)	13.3% BH / 12.5% LD / 10.8% Lo / 6.7% HI	3.224 p <.05	12.6% Md / 12.2% Lo / 10.3% HI	.93 p >.10
IV. Quality of Teacher Feedback[c]	12. Quality of Academic Feedback	2.36 HI / 2.33 Lo / 2.29 LD / 2.22 BH	2.723 p <.05	2.31 HI / 2.20 Md / 2.18 Lo	8.09 p <.01
	13. Quality of Procedural Feedback	1.99 BH / 1.94 LD / 1.91 Lo / 1.87 HI	.319 p >.10	1.79 Lo / 1.74 HI / 1.62 Md	1.18 p >.10
	14. Quality of Behavioral Feedback	2.27 HI / 2.27 Lo / 2.13 LD / 2.05 BH	1.409 p >.10	1.82 Lo / 1.82 Md / 1.70 HI	.52 p >.10
V. Type of Response Opportunities	15. Proportion of Response Opportunities which are volunteer (as opposed to non-volunteer)	65.1% HI / 62.9% BH / 60.5% LD / 55.1% Lo	2.117 p >.10	58.9% HI / 38.4% Lo / 31% Md	18.75 p <.01
VI. Type of questions[d]	16. Quality of Questions	2.80 LD / 2.68 Lo / 2.61 HI / 2.41 BH	3.216 p <.05	2.87 HI / 2.80 Md / 2.70 Lo	1.71 p >.10

[a] Dependent variables #1, #5, and #7 should be interpreted as the number of times per hour that particular activity occurs with each student observed. All other dependent measures in these categories are percentages of total time.

[b] Neuman-Keuls Multiple Comparison Tests were done only for those dependent variables for which there was a statistically significant difference between groups at the $\alpha = .05$ level. For dependent variables for which a Neuman-Keuls comparison was done, those groups underlined by a common line are not statistically significantly different; groups not underlined by a common line are statistically significantly different from each other. For example, on the dependent variable "Frequency of Teacher Initiations," in terms of statistical significance BH > LD, Lo, & HI and LD > HI; but the null hypotheses LD = Lo and Lo = HI could not be rejected.

[c] Each time the teacher provided feedback to a student, it was coded as Criticism = 1; Warning/Neutral = 2; or praise = 3. Each student's score was the average number assigned across all instances of feedback for that student.

[d] Each time the teacher asked the student a question, it was coded as a Self-referant question = 1; Choice question = 2; Product question = 3; or Process question = 4. The score for a student was the average number assigned across all questions asked of that student.

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Table III

Means and Standard Deviation of the Assessment of Classroom Learning Environment (ACLE) Scale

ACLE Scale	X	SD
1. Space and Facility Accommodation	2.33	1.01
2. Teaching Learning Setting	2.24	.89
3. Social Environment	3.14	1.06
4. Control/Responsibility for Environment	2.00	.89
5. Classroom Management	4.19	.67
6. Teaching Arrangements	3.57	.75
7. Instructional Methods	2.76	.89
8. Curriculum Flexibility	2.90	.83
9. Materials	3.19	.68
10. Degree of Structure	3.33	.58
11. Rate of Learning and Behaving	3.19	.81
12. Evaluation	3.85	1.24
13. Affective Education	2.71	.85
14. Recognizing Cultural Differences	2.28	1.27
15. Child Study Process	3.38	1.16
16. Parent-Teacher Interaction	3.14	1.11

Figure 1

Teacher Distribution of ACLE Scale #1
Space and Facility Accommodation

ACLE Rank	Teacher Distribution	Frequency	Cumulative Frequency	Percent	Cumulative Percent
1	OOOO	4	4	19.05	19.05
2	OOOOOOOOOO	10	14	47.62	66.67
3	OOO	3	17	14.29	80.95
4	OOOO	4	21	19.05	100.00

Figure 2

Teacher Distribution of ACLE Scale #2
Teaching Learning Setting

ACLE Rank	Teacher Distribution	Frequency	Cumulative Frequency	Percent	Cumulative Percent
1	OOOO	2	2	9.52	9.52
2	OOOOOOOOOOOOOOO OOOOOOOOOOOOOOO	15	17	71.43	80.95
3	OOOO	2	19	9.52	90.48
4	OO	1	20	4.76	95.24
5	OO	1	21	4.76	100.00

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Figure 3

Teacher Distribution of ACLE Scale #3
Social Environment

ACLE Rank	Teacher Distribution	Frequency	Cumulative Frequency	Percent	Cumulative Percent
1	00	1	1	4.76	4.76
2	0C000C00	4	5	19.05	23.81
3	0C00CC0C000 0C00CC0C0C0	10	15	47.62	71.43
4	000C00	3	18	14.29	85.71
5	0C00QC	3	21	14.29	100.00

Figure 4

Teacher Distribution of ACLE Scale #4
Control/Responsibility for Environment

ACLE Rank	Teacher Distribution	Frequency	Cumulative Frequency	Percent	Cumulative Percent
1	0C0C0QC0C0C0	6	6	28.57	28.57
2	0C0C0C0C0C0C 0C0C0C0C0C0C	11	17	52.38	80.95
3	0C0C	2	19	9.52	90.48
4	0C0C	2	21	9.52	100.00

Figure 5

Teacher Distribution of ACLE Scale #5
Classroom Management

ACLE Rank	Teacher Distribution	Frequency	Cumulative Frequency	Percent	Cumulative Percent
3	000000	3	3	14.29	14.29
4	00000000000 00000000000	11	14	52.38	66.67
5	000000000000000	7	21	33.33	100.00

Figure 6

Teacher Distribution of ACLE Scale #6
Teaching Arrangement

ACLE Rank	Teacher Distribution	Frequency	Cumulative Frequency	Percent	Cumulative Percent
2	0000	2	2	9.52	9.52
3	000000000000	6	8	28.57	38.10
4	000000000000 000000000000	12	20	57.14	95.24
5	00	1	21	4.76	100.00

Figure 7

Teacher Distribution of ACLE Scale #7
Instructional Methods

ACLE Rank	Teacher Distribution	Frequency	Cumulative Frequency	Percent	Cumulative Percent
2	OOOOCCCCCCC OCCCCCCCCCC	11	11	52.38	52.38
3	OCCCCOOO	4	15	19.05	71.23
4	OOOCCCCCCCCO	6	21	28.57	100.00

Figure 8

Teacher Distribution of ACLE Scale #8
Curriculum Flexibility

ACLE Rank	Teacher Distribution	Frequency	Cumulative Frequency	Percent	Cumulative Percent
2	OOOOCCCCCO OOOCOC	8	8	38.10	38.10
3	OCCCCCCCCCCOOO	7	15	33.33	71.43
4	OCCCCCCCOOCO	6	21	28.57	100.00

Figure 9

Teacher Distribution of ACLE Scale #9
Materials

ACLE Rank	Teacher Distribution	Frequency	Cumulative Frequency	Percent	Cumulative Percent
1	OO	1	1	4.76	4.76
3	OOOOOOOOOOOOO OOOOOOOOOOOOO	14	15	66.67	71.43
4	OOOOOOOOOOO	6	21	28.57	100.00

Figure 10

Teacher Distribution of ACLE Scale #10
Degree of Structure

ACLE Rank	Teacher Distribution	Frequency	Cumulative Frequency	Percent	Cumulative Percent
2	OO	1	1	4.76	4.76
3	OOOOOOOOOOO OOOOOOOOOOO	12	13	57.14	61.90
4	OOOOOOOOO OOOOO	8	21	38.10	100.00

Figure 11

Teacher Distribution of ACLE Scale #11
Rate of Learning and Behaving

ACLE Rank	Teacher Distribution	Frequency	Cumulative Frequency	Percent	Cumulative Percent
2	00	2	2	9.52	9.52
3	0C0C0C0000 0C0CQC	16	18	76.19	85.71
5	000	3	21	14.29	100.00

Figure 12

Teacher Distribution of ACLE Scale #12
Evaluation

ACLE Rank	Teacher Distribution	Frequency	Cumulative Frequency	Percent	Cumulative Percent
1	00	1	1	4.76	4.76
2	0000	2	3	9.52	14.29
3	0CCCCCC000	5	8	23.81	38.10
4	0CCCCC00	4	12	19.05	57.14
5	0CCCCCC000 0CCCCCC0	9	21	42.86	100.00

Figure 13

Teacher Distribution of ACLE Scale #13
Affective Education

ACLE Rank	Teacher Distribution	Frequency	Cumulative Frequency	Percent	Cumulative Percent
1	OOOOOO	3	3	14.29	14.29
2	OOOO	2	5	9.52	23.81
3	OOOOOOOOOOOOOO OOOOOOOOOOOOO	14	19	66.67	90.48
4	OOOO	2	21	9.52	100.00

Figure 14

Teacher Distribution of ACLE Scale #14
Recognizing Cultural Differences

ACLE Rank	Teacher Distribution	Frequency	Cumulative Frequency	Percent	Cumulative Percent
1	OOOOOOOOOO OOOOOO	8	8	40.00	40.00
2	OOOOOOOO	4	12	20.00	60.00
3	OOOOOOOO	4	16	20.00	80.00
4	OOOOOO	3	19	15.00	96.00
5	OO	1	20	5.00	100.00

Figure 15

Teacher Distribution of ACLE Scale #15
Child Study Process

ACLE Rank	Teacher Distribution	Frequency	Cumulative Frequency	Percent	Cumulative Percent
1	00000	1	1	5.00	5.00
2	000000000 00000	3	4	15.00	20.00
3	000000000000000 000000000000000	6	10	30.00	50.00
4	000000000000000 000000000000000	6	16	30.00	80.00
5	00000000000 00000000000	4	20	20.00	100.00

Figure 16

Teacher Distribution of ACLE Scale #16
Parent-Teacher Interaction

ACLE Rank	Teacher Distribution	Frequency	Cumulative Frequency	Percent	Cumulative Percent
2	000000000 00000000	9	9	42.86	42.86
3	0000	2	11	9.52	52.38
4	0000000000 000000	8	19	38.10	90.48
5	0000	2	21	9.52	100.00

DISCUSSION

TEACHER STUDENT INTERACTION

In the following section of discussion of the results obtained in the South Dakota/Iowa study will be presented. In addition, a comparison of the SD/I results will be made with the results found in the Utah study.

TEACHER-INITIATED INTERACTIONS

One of the conditions set by Heron and Skinner (1981) for considering the regular classroom as the least restrictive environment is the extent to which the teacher interacts proportionately with all the students in the classroom. The results of the SD/I study indicate that handicapped children received more teacher initiations than either highs or lows in terms of absolute frequency, and that handicapped and lows both received significantly more initiations from the teacher than did highs. In the Utah study, behaviorally handicapped students received the most teacher initiations, while learning disabled and lows were the same and high achieving students received the smallest number of initiations from the teacher. The results of both studies support Chapman (1975) who found that learning disordered students received more interactions than high or low achieving, nonhandicapped students. Werry and Quay (1969), Martin (1972), and Forness and Esveldy (1975) found that students who had been identified as disruptive and aggressive received more total teacher initiations than their nonhandicapped peers.

The results of both studies must be considered in light of the time handicapped students spend in the regular classroom. For example, in the South Dakota study, high achievers were observed for an average of 15.95 hours, low achievers were observed for an average of 16.28 hours, and handicapped students were observed for an average of 12.98 hours. Similar proportions were seen in the Utah study. This means that even though the handicapped students were in the classroom less time, they received the most teacher initiations.

Heron and Skinner (1981) argue that each student in the mainstreamed classroom should receive a fair portion of the teacher's attention each day. The results found in both the South Dakota/Iowa and Utah studies would seem to indicate that handicapped students receive disproportionatly larger amounts of the teacher's time. What may be occurring in these classrooms is inappropriate reinforcement for the handicapped students' off-task behavior, or there may be an attempt by the regular classroom teacher to provide extra help to children they view as

unable to cope academically, emotionally, or socially. These results do not support studies which found that teachers initiated more contacts and were involved with more interactions with high achievers than with low achievers (Good, 1970; Kranz, Weber, & Fishell, 1970; Carne & Bing, 1973)

TYPE OF TEACHER INITIATION

In both the South Dakota/Iowa and Utah studies, teacher initiations were divided into three categories: Academic contacts (e.g., seatwork, homework, and question and answer sequences), procedural initations ("housekeeping" chores and other nonacademic activities), and behavioral initiations (e.g., teachers singled out a student to comment solely on his or her behavior). In the SD/I study, significant differences were found in the proportion of both academic and behavioral teacher initiations to the three student groups. Handicapped and low achievers received significantly less academic initiations and significantly more behavioral initiations than did high achievers. There were no significant differences in the proportion of procedural initiations to the three student groups. In the Utah study, no differences were found in academic or procedural initiations among the four groups observed in that study. Differences in the proportion of the behavioral teacher initiations to the behaviorally handicapped students and the high achievers were found. (Note: The data reported by Thompson et al. (1982) should have been reversed for variables three and four. The data reported as procedural teacher initiations were, in fact, behavioral teacher initiations and vice-versa.)

By examining the percentage of teacher initiations to the three student groups in the SD/I study (see Table IIIb), it can be seen that high achievers got the most academic and the least behavior initiations while low achievers got the least academic and the most behavioral. This same pattern can be seen in the Utah data (see Table IIIa). Low achievers and handicapped students seem to be treated in similar ways by the teacher in terms of the number and type of initiations she makes to them in both studies.

STUDENT-INITIATED INTERACTIONS

Neither the frequency nor the type of student initiations differed among the three groups of students observed in the SD/I study. These results are quite different from those found in the Utah study where behaviorally handicapped students initiated almost twice as many interactions with the teacher as did their high-achieving, nonhandicapped peers. In the South Dakota study, no distinction was made between the kind of handicapping condition; and this change may account for not seeing any differences in student initiations among the student groups in the SD/I study.

Table IIIa

Utah Study

Proportion of Teacher Initiations Which Are Academic, Procedural, and Behavioral

Dependent Measure	Student Group Highs	Lows	LD	BH
Teacher Initiations Academic	62%	57%	58%	52%
Teacher Initiations Procedtral	15%	14%	14%	11%
Teacher Initiations Behavicral	23%	29%	28%	37%

The proportion of student initiations from all student groups was an average of 22% procedural and 78% academic. In the Utah study approximately the same proportions were found. (Note: The data reported by Thompson et al. (1982) contained an error. The data reported as procedural student initiations should have been academic student initiations.)

When the correction is made in the Utah data, the data from both studies indicate that, on the average, all student groups sought out the teacher for academic help three to four times as often as they initiated procedural interactions.

Table IIIb

South Dakota/Iowa Study

Proportion of Teacher Initiations Which Are Academic, Procedural, and Behavioral

Dependent Measure	Student Group Highs	Lows	Handicapped
Teacher Initiations Academic	69%	63%	64%
Teacher Initiations Procedural	19%	19%	20%
Teacher Initiations Behavioral	11%	17%	15%

FREQUENCY OF TEACHER FEEDBACK

The overall frequency of teacher feedback in the SD/I study was highest for low achievers with the handicapped students receiving the next largest amount. The high achievers received a statistically significant smaller amount of feedback than lows and handicapped students. The proportion of academic (an average of 70%) and procedural (an average of 20%) feedback statistically was not significant among the student groups. The proportion of behavioral feedback, however, was higher for lows (11.8%) and handicapped (11.2%) than for highs (7.5%). In the Utah study, there was no difference between the high, low, or learning disabled in either total feedback or behavioral feedback. However, the behaviorally handicapped students received higher amounts of total feedback and behavioral feedback.

It seems that the breaking of handicapped students into categories in the Utah study might have provided a more sensitive measure. The behaviorally handicapped students were the ones most often treated in different ways. In the South Dakota/Iowa study, the handicapped students and the low achievers seem to be treated as the same group and different from high achievers in all cases where group differences were found.

In contrast to the Utah study, no statistically significant differences were found in the SD/I study among the groups in the proportion of teacher feedback that was sustaining (i.e., designed to continue the interaction) as opposed to terminal (i.e., designed to end the interaction). Tables IVa and IVb provide a comparison. In the Utah study, behaviorally

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handicapped students received significantly more sustaining feedbacks (13.3%) than did high-achieving, nonhandicapped students (6.7%). In other words, teachers were more apt to provide behaviorally handicapped students with a clue, rephrase the question, or ask additional questions in order to sustain the interaction. In the SD/I study, the handicapped students and the low-achieving, nonhandicapped students received more sustaining feedback (12.6% and 12.2%) than the high achievers (10.3%); however, the difference was not statistically significant. The findings of both studies seem to contradict the findings of Brophy and Good (1970), who reported that teachers were twice as likely to stay with high-achieving students and give up on low-achieving students.

It is important to note that in both the Utah and South Dakota/Iowa studies that the majority of teacher feedback for all students was terminal (See Tables IVa and IVb). Chapman (1975) reported similar results in that teachers provided very little sustaining feedback to any of the groups observed. In a study by Massad and Etsil (1972), a significant increase in learning was achieved in situations where students were given more opportunities to respond. Heron and Skinner (1981) have stated that one

Table IVa

Utah Study

Proportion of Teacher Feedback
Sustaining vs. Terminal

Teacher Feedback	Student Groups			
	BH	LD	Low	High
Sustaining	13.3%	12.5%	10.8%	6.7%
Terminal	86.7%	87.5%	89.2%	93.3%

condition for considering the regular classroom to be the least restrictive environment for handicapped students is an educational setting which maximizes the handicapped child's opportunity to respond and achieve. The data from both studies may indicate that many teachers frequently do not use the higher level skills required in interactive teaching. In such learning environments, it is questionable that handicapped students will have enough opportunities to respond to maximize learning.

Table IVb

South Dakota/Iowa Study

Proportion of Teacher Feedback
Sustaining vs. Terminal

Teacher Feedback	Student Groups		
	HC	Low	High
Sustaining	12.6%	12.2%	10.3%
Terminal	87.4%	87.8%	89.7%

QUALITY OF TEACHER FEEDBACK

In addition to examining the total frequency of teacher feedback and the proportions of academic, procedural, and behavioral feedback given by the teacher, an attempt to examine the quality of teacher feedback was made in both studies. The quality of feedback provided to students in each of the student groups is particularly important because of the hypothesis that certain types of feedback (e.g., praise, encouragement, affection) result in more effective and growth-promoting learning environments than other types of feedback (e.g., criticism, ridicule, reinforcing inappropriate behaviors). Each instance of the teacher's academic and procedural feedback was coded as praise, neutral, or criticism; and each instance of behavioral feedback was coded as praise, warning, and criticism. In the SD/I study, statistically significant differences were found in the quality of academic feedback (handicapped and lows received a lower quality than did high achievers), but no differences among the groups were found in the quality of procedural and behavioral feedback. As with other dependent measures, the results of the Utah study were generally similar except the differences were between high achievers and behaviorally handicapped students.

Additional descriptive information about the nature of academic, procedural, and behavioral feedback can be gained by examining the percentages of teacher feedback given to each group. In both studies (See Tables Va and Vb), students in all groups received substantially more neutral academic and procedural feedback and warnings of behavioral feedback than either praise or criticism. White (1975) defined disapproval using the same elements that are contained in the behavioral warning and behavioral criticism codes used in both the studies described here, and he similarly found that teachers were far more disapproving of students than approving.

Table Va

Utah Study

Percentages of Teacher Feedback Given to Each Group of Students Involving Praise, Neutral Warning, and Criticism

Measure	High Achieving	Low Achieving	LD	BH
Academic Feedback				
Praise	20%	18%	16%	13%
Neutral	76%	79%	81%	84%
Criticism	4%	3%	3%	5%
Procedural Feedback				
Praise	4%	2%	1%	1%
Neutral	94%	96%	96%	95%
Criticism	2%	2%	3%	4%
Behavioral Feedback				
Praise	22%	15%	10%	5%
Warning	73%	80%	86%	87%
Criticism	3%	5%	4%	8%

Table Vb

South Dakota/Iowa Study

Percentages of Teacher Feedback Given to Each Group of Students Involving Praise, Neutral Warning, and Criticism

Measure	High Achieving	Low Achieving	HD
Academic Feedback			
Praise	21%	18%	21%
Neutral	76%	78%	73%
Criticism	3%	8%	6%
Procedural Feedback			
Praise	1.5%	1%	1%
Neutral	97%	94%	97%
Criticism	1.5%	5%	2%
Behavioral Feedback			
Praise	7%	4%	6%
Warning	79%	72%	74%
Criticism	14%	24%	20%

The large proportion of disapproval (i.e., warning plus criticism) observed in both the Utah and SD/I studies does not indicate an effective learning environment was being provided. Researchers have shown that a positive environment where frequent praise is given for appropriate behavior is much more conducive to student achievement than an environment where disapproval is the primary feedback (Brophy & Evertson, 1976). Rosenshine, (1976) has shown that students with low self-esteem and a history of failure require much more encouragement and are particularly vulnerable to criticism. In contrast, the students who have high self-esteem and a history of success did not find praise nearly as rewarding or motivating. Teachers in both the Utah and SD/I studies tended to provide feedback in ways that are contrary to what would seem effective for either group.

FREQUENCY OF VOLUNTEER RESPONSE OPPORTUNITIES

Another variable investigated was whether teachers provided the most opportunities for participation to students who were not volunteering (i.e., called upon when hands were not raised), as opposed to those who were volunteering (i.e., called upon after raising their hands). In the SD/I study, a significant difference was found between the high-achieving, nonhandicapped students (59% volunteer) and both the low-achieving, nonhandicapped students (38% volunteer) and handicapped students (31% volunteer). Teachers seem to seek out nonvolunteers in the handicapped and low-achieving student groups in order to engage them in classroom discussions. This would seem to be a positive finding indicating an attempt on the teacher's part to increase participation. No significant differences were found in the Utah study. The average for all student groups was about 60% volunteer response opportunities.

QUALITY OF QUESTIONS

Teacher's questions to students were coded as process, product, choice, or self-reference in both studies. Generally, these four types of questions can be viewed on a continuum of difficulty from more demanding to less demanding in terms of the knowledge required of the student to answer. Previous research has reported that high-achieving students generally receive more higher-level questions than low-achieving students (Brophy & Good, 1974). In the SD/I study, no significant differences were found among the three student groups. Total scores for all groups in both studies indicate that, on the average, teachers used mostly lower-level questions. Very few process questions and only a moderate number of product questions were asked of any group of students.

This finding, however, may not be as negative as it first appears. Rosenshine (1976) reviewed several studies that indicated a positive correlation between achievement and factual single-answer questions, whereas the frequency of more complex questions (such as the process questions in these studies) had negative correlations. Particularly for low-achieving and mildly handicapped students, it may be preferable to proceed in small steps, asking factual questions instead of expecting the child to engage in complex reasoning at too early a stage in their educational growth.

CLASSROOM LEARNING ENVIRONMENT

The following discussion was generated by examining teachers' self-ratings on the sixteen sub-scales of the ACLE. Actual percentages and mean scores (where 1 is lowest and 5 is highest in terms of accommodating handicapped students in mainstreamed classrooms) are presented in Table III and in Figures 1 through 16. Each subscale of the ACLE is discussed separately. The specific research question addressed was "How do regular classroom teachers perceive their classroom learning environments in comparison to descriptions of an "ideal mainstreamed classroom"? For the purpose of this discussion, majority means a percentage of 70% or more).

1. Space and Facility Accommodation to Physical Impairments?

   The majority of the teachers ranked themselves 3 or below with a mean rank of 2.33.

   Most teachers did not view their classrooms and buildings as having adequate space and facilities for accommodating handicapped children with physical impairments.

2. Teaching-Learning Settings

   The majority of teachers ranked themselves 2 or below with a mean rank of 2.23.

   Most teachers described their classrooms as follows: "desks of uniform design are placed in the same direction; at least one 'special interest area' is included." Such limitations in the teaching-learning setting could be a source of frustration when attempts are made to diversify programs to accommodate handicapped students.

3. Social Environment

   The majority of teachers ranked themselves 3 or below with a mean rank of 3.34.

Most teachers reported that students in their classroom worked in small groups at least part of the time and were expected to learn to work with each other; however, goals for group work were not specific. In other words, most teachers did not "plan" to teach peer cooperation.

The conclusion above should be viewed in light of Reynold's statement that the children who are most different have the most to gain in cooperative groups and the most to lose when the social environment encourages competition or isolation.

4. Control and Responsibility for Environment

The majority of teachers ranked themselves 2 or below with a mean rank of 2.0.

Most teachers stated that their students shared occasionally in discussions of how the school environment is managed. To make mainstreaming work better, all students should be given expanded opportunities to control the school environment and, correspondingly, to take responsibility for that control.

5. Classroom Management

The majority of the teachers ranked themselves 4 or above with a mean rank of 4.19.

Most teachers felt that, overall, their communication with students was good; and, that while some days were very bad, most days were tolerable to good. Teachers also felt that they shared responsibilities for the environment with students and that they rationalized rules in group sessions.

(NOTE: The conclusion above seems to be somewhat contradictory with the conclusion reached in looking at scale number four. This may be due to the terminology "classroom managment." One of the most common types of inservice training provided these teachers in the past few years has been in classroom management. It may be that classroom management skills are viewed as "teacher control" skills. Scale number four also seems to indicate that teachers view control of and responsibility for environment is under the teachers' direction).

6. Teaming Arrangements

The majority of teachers ranked themselves 4 or below with a mean rank of 3.57.

Most teachers felt that they worked well in identifying and planning for the education of "problem" students. Many of the teachers also felt that classroom observations were made of the student in the regular classroom, and that they received consultation on how to make program modifications.

7. Instructional Methods

The majority of teachers ranked themselves 3 or below with an mean rank of 2.76.

Most teachers perceived themselves as using at least 5 different instructional methods in a typical month. The assumption made here is that an important aspect of instruction is to provide alternative methods that allow for optimal learning for all students. The teachers who rank themselves at 4 indicated that they not only used at least 5 instructional methods, but they also were studying on their own or consulting with others about additional approaches for some students with special needs.

8. Curriculum Flexibility

The majority of teachers ranked themselves 3 or below with a mean rank of 2.90.

Most teachers reported that they basically followed a textbook or curriculum guide in setting content and the sequence of topics to be taught. They did, however, use more than one level or set of textbooks in heterogenous classes. In addition to the above perceptions, some teachers also stated they assessed individually and gave tasks and materials at levels indicated by assessment as appropriate. No teacher reported that they actively sought student input into the materials selection process.

9. Materials

The majority of teachers ranked themselves 3 or below with a mean rank of 3.19.

Most of the teachers indicated that they used textbooks, library materials, and, occasionally, films, filmstrips, audiotapes, and similar aids. The remaining teachers agreed that they used the materials mentioned above and, in addition, used materials in established interest centers. No teacher reported using "specialized instructional materials."

10. Degree of Structure

The majority (in this case 62%) of teachers ranked themselves at 3 or below a mean rank of 3.33. (The remaining 38% of the teachers ranked themselves at 4.).

Most of the teachers reported that all of the students received a carefully structured approach as new concepts or content was introduced. Students who completed their work rapidly were free to proceed in their own way in their extra time. The remaining teachers reported that they varied the degree of structure so that all students had a variety of experiences and that the degree of structure was a function of the teacher's own interest and not fully a function of the individual student needs. No teacher reported that they systematically varied structure as a function of individual student needs.

11. Rate of Learning and Behaving

The majority of teachers ranked themselves at 3 or below with a mean rank of 3.19.

Most teachers felt that they gave all students uniform minimum assignments for standard periods of time. Students who scored rapidly were allowed by the teachers to proceed to more advanced related topics while students who failed to complete tasks were given extra tasks and/or assigned to aides, resource teachers, or others for individual help.

12. Evaluation

The majority of teachers ranked themselves 3 or above. The mean rank was 3.85.

This scale showed the variablity. The continuum of the scale ran the gamut from strictly norm-referenced testing procedures (one teacher ranked herself at level one) to a widely varied system of evaluation which included observations, informal assessments, and domain oriental testing (nine teachers ranked themselves at level 5).

Most teachers identified themselves with statements that indicated they assessed with mastery oriented tests that were specific to damins and that they used the results effectively and regularly in planning instruction. Teachers felt that they gave good feedback about teast results and enccuraged students to evaluate their own work.

Teachers indicated that grades, however, were assigned on a norm or social comparison basis.

13. Affective Education

The majority of teachers ranked themselves at 3 or below with a mean rank of 2.71.

Most teachers indicated that they recognized affective education as worthwhile and planned to include such instruction in their teaching. However, they did so on an infrequent basis. In other words, teachers felt it was important to teach curriculum designed to facilitate the development of a positive view of self, but they didn't include such instruction very often.

14. Recognizing and Appreciating Cultural Differences

The majority of teachers ranked themselves a 3 or below with a mean rank of 2.28.

Most teachers indicated that they or their schools made some efforts to recognize cultural differences. However, eight teachers (38%) felt that instruction proceeded with little or no explicit recognition of cultural differences and that majority values and styles dominated their classrooms.

15. Child Study Process

The majority of teachers ranked themselves at 3 or below with a mean rank of 3.38.

Nearly half of the teachers (those who ranked themselves at 4 or 5) indicated that the child study process was educationally oriented and focused on improving learning environments so as to better accommodate diversity. The other half of the teachers reported that they felt that the child study process was basically psycho-educational in nature with heavy emphasis on the use of standardized assessments for classification purposes.

16. Parent-Teacher Interaction

Fifty percent of the teachers ranked themselves at 3 or below and fifty percent ranked themselves at 4 or above. The mean rank was 3.14.

Half of the teachers indicated that parent-teacher interaction was periodic, teacher-initiated, positive, and used to report on students' progress. The other half of the teachers saw parent-teacher interaction more as an open and trusting communication session where both teacher and the parents participated in information sharing.

CONCLUSIONS

In discussing mainstreaming, Larsen (1975) warned:

> In all probability, special education students will receive more criticism from their teachers than their achieving peers, will be exposed to far fewer teacher contacts, and will develop less positive concepts of self-worth (p. 12).

The literature examining how teachers interact with high and low achieving students provides some evidence to suggest that Larsen's warning may be accurate if mainstreamed handicapped students were treated like low achievers. Findings of studies examining the interaction of regular teacher and handicapped students, however, are not conclusive and provide evidence both supporting and refuting Larsen's warning.

The overall conclusion of both the Utah and SD/I studies is that, although there is substantial evidence that teacher-student interaction varies among the student groups observed, there is no strong evidence that general preferential treatment or treatment likely to result in better educational gains or a more effective learning environment is consistently provided to any single group of students. There was some evidence that mainstreamed handicapped students received a larger portion of the teacher's time than did other students. However, a larger percentage of these initiations were behavioral contacts.

Teacher feedback was, for the most part, neutral to all students when the feedback was about academic or procedural matters. In behavioral interactions, warnings were the primary teacher feedback. When criticism was used, it was more often to the low-achieving and handicapped students. These results suggest that teachers need to acquire better classroom and behavior management skills. Teachers will need to use a behavioral management strategy where the behavior of every student is dealt with in an appropriate way. It is interesting to note here, that the ACLE scale describing 'Classroom Management' had the highest average score of all the scales. Teachers in the SD/I study indicated that their classroom management skills were already close to what they should be in an ideal mainstreamed classroom. This contridiction in data needs futher investigation.

Teachers were engaged in academic interactions with all student groups an average of only 60% of the time. It is unfortunate that such a high percentage of the teacher's time was spent involved with procedural and behavioral matters. A better balance between academic and other activities should be achieved.

Placement of handicapped students in the regular classroom is increasingly popular. Such decisions are often based upon the student's academic or social functioning. While these student

variables are important, there are also teacher and classroom variables which must be considered in defining the least restrictive environment for mildly handicapped students. Helping teachers increase their skills in classroom management and the use of school time spent on academics and more proportionate teacher-student interaction would lead to a better learning environment for all students.

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APPENDIX A

Coding Sheet and Categorical Breakdown and Definitions of the Modified Brophy-Good Teacher-Child Interaction System

Categorical Breakdown and Definitions

I. RESPONSE OPPORTUNITIES--TEACHER AFFORDED

Involves a public attempt by an individual student to deal with a question posed by the teacher.

A. Type of Response Opportunity Afforded by the Teacher to the Student

1. Discipline question--the teacher deliberately calls on the child to compel his attention

2. Direct question--the teacher calls on a child who is not seeking a response opportunity

3. Open question--the teacher asks a question, waits for anyone in the class to raise his hand and then calls on one of the children whose hand is up

4. Call out--teacher asks a public question but one child calls out an answer to this question before the teacher has the chance to indicate that a particular child should respond.

After noting the type of Response Opportunity and identifying the child involved by entering his identification number, the observer then codes the Level of Question asked by the teacher.

B. Level of Question

Refers to the nature of the response demand made upon the child. The first three levels refer only to questions about academic or school related context. The fourth level is used to code all questions that do not refer to academic subject matter.

1. Process question--requires the child to specify the cognitive and/or behavioral steps that must be gone through in order to solve a problem or come up with an answer

2. Product question--requires knowledge of a specific fact and does not force the child to integrate several facts or to make inferences from them

3. Choice question--the child does not have to produce a substantial response but may instead simply choose one of two or more implied or expressed alternatives

4. Self-referenced question--includes all teacher questions that do not fit into the preceding three categories because they ask the child to make some nonacademic contribution to classroom discussion

After coding the child's identity, the Response Opportunity, and the Level of Question, the observer then codes the child's answer into one of four categories.

C. Child's Answer

1. Correct--the child answers the teacher's question correctly; the teacher does not make an attempt to improve upon or replace the child's answer with another

2. Partially correct--correct but incomplete as far as the child goes, or answers that are correct from one point of view but not the answer for which the teacher was looking

3. Incorrect answer--response treated as wrong by the teacher

4. No response--the child will not or cannot answer the question

After identifying the child by number, coding the level and type of question, and coding the quality of the child's answer, the observer completes the sequence for coding response opportunities by indicating the nature of the teacher's feedback reaction to the child's answer.

D. Teacher's Feedback Reaction

1. Praise--positive evaluation

2. Affirmation of correct response--positive feedback

3. No feedback reaction--teacher does not react to child's answer

4. Negation of incorrect answers--negative feedback

5. Criticism--negative evaluation

6. Process feedback--feedback on answers to questions involving basic facts which have been memorized

7. Gives answer--teacher gives correct answer

8. Asks question--teacher does not provide an answer to the question upon response but asks another child for the answer

9. Call out--some other child calls out the answer before the first child can respond to the question; thus, the teacher does not have the chance to give feedback to the child to whom the question was directed

10. Repeats question--teacher repeats the question

11. Rephrase or clue--teacher rephrases question or gives student a clue

12. New question--teacher asks another new question following the first without waiting for response

If a student raises a question or makes a comment without the teacher's having invited the question or comment, the observer codes the following information:

II. RESPONSE OPPORTUNITY--CHILD CREATED

Involves a public question or comment made by the student

A. Type of Question or Comment

1. Permission given--the student raises his hand requesting permission to ask a question or make a comment, and the teacher allows him to do so

2. Call out--the student calls out his question or comment without obtaining permission

B. Appropriateness of Question or Comment

1. Relevant--the student's question or comment pertains to the current discussion

2. Irrelevant--the student's question or comment does not pertain to the discussion at hand

C. Teacher's Feedback Reaction

Pertaining to the actual question or comment

1. Praise--positive evaluation

2. Criticism--negative evaluation

3. No feedback reaction--teacher does not react to the child's answer

D. Teacher's Feedback Reaction

Pertaining to the student's behavior in asking a question or making a comment

1. Praise--positive evalution

2. Criticism--negative evaluation

3. Warning--student behavior is inappropriate

III. DYADIC TEACHER-STUDENT CONTACTS

Involves those contacts where the teacher is dealing privately with one child about matters idiosyncratic to that child

A. Child Created

Refers to those dyadic contacts which occur solely because the child has sought the teacher out

1. Work related contacts--includes those contacts that have to do with the child's completion of seat work, homework, or other academic assignments

   a. teacher feedback reaction
      i. praise--positive evaluation
      ii. neutral--nonevaluative process and product feedback
      iii. criticism--negative evaluation

2. Procedure--includes those requests that have to do with housekeeping chores, seeking permission, and reporting on nonacademic assignments

   a. teacher feedback reaction
      i. praise--positive evaluation
      ii. neutral--nonevaluative feedback
      iii. criticism--negative feedback evaluation

B. Teacher Afforded

Refers to those dyadic contacts in which the teacher seeks out the student to give directions or feedback

1. Work related contacts--includes those which have to do with the child's completion of seatwork, homework, or other academic assignments

a. teacher's feedback reaction
   i. praise--positive evaluation
   ii. neutral--nonevaluative process and product feedback
   iii. criticism--negative evaluation

2. Procedure--includes those requests made by the teacher which have to do with housekeeping chores and requests to complete other nonacademic assignments

3. Observation contacts--refers to nonverbal observation of the student by the teacher for the purpose of monitoring the student's actions

4. Behavior related contacts--refers to those comments made by the teacher about the student's classroom behavior

   a. teacher's feedback reaction
      i. praise--positive evaluation
      ii. warnings--student behavior is inappropriate
      iii. criticism--negative evaluation

CLASS_____ DATE__/__/__ START_____ ELAPSED_____

ACTIVITY_____ OBSERVER_____ STOP _____ PAGE___of____

| STOP TIME | RESPONSE OPPORTUNITIES | | |